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EXAMINER

MYINT, DENNIS Y

ART UNIT PAPER NUMBER

2162

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/648,064	<b>Applicant(s)</b> CHANG ET AL.	
	<b>Examiner</b> Dennis Myint	<b>Art Unit</b> 2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>26 August 2003</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-20 have been examined.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claim 1-6, 8-10, and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gelb et al., (U.S. Patent Number 5018060) in view of Basham et al. (U.S. Patent Number 5757571).

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Referring to claim 1, Gelb et al. is directed to a system and method for selecting storage media to improve data access performance, the system and method comprising:

a reception module (Gelb et al., Figure 4 "Data Facility Product" 32) configured to receive a dataset for storage on a storage medium (Gelb et al., Figure 4 "Peripheral Data Storage" 12) (Gelb et al., Column 18 Line 47 through Column 19 Line 59); and

an identification module (Gelb et al., Figure 4 "Data Facility Product" 32) configured to identify storage characteristics ("*parameters*") of the dataset (Gelb et al., Column 19 Line 16-39 "*The parameters in MGMTCLAS ACS ROUTINE are compared with the received data set parameters for determining a best comparison which indicates which of the management classes listed above is selected for the data set.*");

and a storing module (Gelb et al., Figure 4 "Data Facility Product" 32) which stores the data set a storage medium (Gelb et al., Figure 4 "Peripheral Data Storage" 12) according to the storage characteristics of the data set (i.e. *received data set parameters*).

Gelb et al. does not explicitly disclose that said system and method comprises a scaling process according storage criteria applied to the storage characteristics. However, Basham et al. teaches a system and method wherein flexible-capacity scaling is used to improve the data access time (Basham et al. Figure 8 and Column 14 Line 1 through Column 15 Line 39).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to the feature of storage medium scaling as taught by Basham et

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al. to the system and method of taught for selecting storage media to improve data access performance taught by Gelb et al. so that the resultant system would constitute an apparatus for selecting storage media scaling to improve data access performance, wherein the storing module (Gelb et al., Figure 4 "Data Facility Product" 32) would be performing the functions of the reception module, identification module, and scaling module of the claimed invention. One would have been motivated to do so in order to "more efficiently and conveniently locate, read, write, and update data stored on magnetic tape media (Basham et al., Column 2, Line 47-49) ".

Referring to claim 2, the apparatus of Gelb et al. in view of Basham et al. as discussed above with regard to claim 1 discloses the invention as claimed. Gelb et al. in view of Basham et al. is directed to the apparatus of claim 1, wherein the storage instruction ((*"parameters"* Gelb et al., Column 19 Line 16-39 *"The parameters in MGMTCLAS ACS ROUTINE are compared with the received data set parameters for determining a best comparison which indicates which of the management classes listed above is selected for the data set."*) comprises an instruction to scale the storage medium (Basham et al., Column 2, Line 47-49) to a predefined capacity (Gelb et al., Column 12 Line 43-60 and Basham et al., Column 13 Line 32-42) for optimal data access performance ( Gelb et al., Column 8 Line 20-62 *"Storage classes and their service attributes"* ). Specifically note that the system and method of Gelb et al. could specify (predetermine) the capacity and the system of Basham et al. could scale the capacity as necessary.

Referring to claim 3, the apparatus of Gelb et al. in view of Basham et al. as discussed above with regard to claim 1 discloses the invention as claimed. In the apparatus of Gelb et al. in view of Basham et al. as applied to claim 1, storage instructions could be to save the data set in the storage medium without scaling the storage medium, that is, without calling the scaling routine taught by Basham et al. (Gelb et al., Column 19 Line 16-58).

Referring to claim 4, the apparatus of Gelb et al. in view of Basham et al. as discussed above with regard to claim 1 discloses the invention as claimed. Gelb et al. in view of Basham et al. teaches the apparatus of claim 1, further comprising a determination module (Gelb et al., Figure 4 "Data Facility Product" 32) configured to store a plurality of predefined storage criteria ("storage classes", Gelb et al., Column 12 Line 43-61) and compare the storage characteristics of the received dataset with the predefined storage criteria to determine the storage instruction ("compare the information", Gelb et al., Column 18 Line 47 through Column 19 Line 15).

Referring to claim 5, the apparatus of Gelb et al. in view of Basham et al. as discussed above with regard to claim 1 discloses the invention as claimed. Gelb et al. in view of Basham et al. teaches the apparatus of claim 1, further comprising a mapping module (Gelb et al., Figure 4 "Data Facility Product" 32) configured to track capacity information for the storage medium that stores the dataset (Basham et al., "automated padding", Column 13 Line 43-67). Note that the system of Basham et al. tracks the capacity of the storage medium and such feature could be combined into the "Data Facility Product" of the system of Gelb et al.

Referring to claim 6, the apparatus of Gelb et al. in view of Basham et al. as discussed above with regard to claim 1 discloses the invention as claimed. Gelb et al. in view of Basham et al. teaches the apparatus of claim 1, wherein the scaling module (the storing module, i.e., Gelb et al., Figure 4 "Data Facility Product" 32) is configured to communicate the selected instruction to a storage medium controller (Gelb et al., Figure 4 "IOS" 37).

Claim 8 is rejected on the same basis as claim 2.

Claim 9 is rejected on the same basis as claim 3.

Claim 10 is rejected on the same basis as claim 4. Note that the storing module (Gelb et al., Figure 4 "Data Facility Product" 32) would be performing the functions of the reception module, identification module, and scaling module of the claimed invention.

Claim 15 is rejected on the same basis as claim 4 ("*Machine-effected method of the invention, ....*" Gelb et al., Column 4 Line 25-27).

Referring claim 16 and 17, the system and method of Gelb et al. in view of Basham et al. as discussed above with regard to claim 15 discloses the invention as claimed. Specifically note that, in the apparatus/system of Gelb et al. in view of Basham et al., storage characteristics are defined for different levels of capacity, access mode, and performance (Gelb et al., Column 8 Line 20-62 "*Storage classes and their service attributes*") and storage medium could scaled as necessary employing the scaling method taught by Basham et al. Therefore, the method and system of Gelb et al. in view of Basham et al. further comprises defining a plurality of storage characteristics as

storage characteristics that either require storage on optimally scaled storage medium or satisfy storage criteria for storing the dataset on optimally scaled storage medium.

Claim 18 and 19 are rejected on the same basis as claim 16 and 17 respectively.

Claim 20 is rejected on the same basis as claim 5.

3. Claim 7, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gelb et al., in view of Basham et al. and further in view of Bergsten (U.S. Patent Application Publication Number 2003/0204672).

The apparatus of Gelb et al. in view of Basham et al. as applied to claim 1 does not explicitly teach that said apparatus is attached to a network. However, Bergsten teaches a system and means of an advanced storage controller which is attached to a network (Bergsten, Figure 3, "Network Adapter" 312 and Paragraph 0032 and 0033).

At the time the invention was made, it would have been obvious to person of ordinary skill in the art to add the feature of coupling a storage system controller to a network as taught by Bergsten to the system and apparatus of Gelb et al. in view of Basham et al. so that the resultant system would be a system for scaling a storage medium to improve data access performance, the system comprising:

a network configured to communicate data (Bergsten, Figure 3, "Network Adapter" 312 and Paragraph 0032 and 0033);

a storage controller coupled to the network (Bergsten, Figure 3, "Network Adapter" 312 and "Advanced Storage Controller" 100 and Paragraph 0032 and 0033);



a storage device having a storage medium configured to store data (Gelb et al., Figure 4 "Peripheral Data Storage" 12) received from the controller over the network (Bergsten, Figure 3, "Network Adapter" 312 and "Advanced Storage Controller" 100 and Paragraph 0032 and 0033);

a host (Gelb et al., Figure 4, "host processor" 10 and Column 15 Line 51-67) coupled to the network (Bergsten, Figure 3, "Network Adapter" 312 and Paragraph 0032 and 0033), the host configured to exchange data with the controller (Bergsten, Figure 3, "Advanced Storage Controller" 100 and Paragraph 0032 and 0033);

an application operating within the host, the application configured to produce a dataset to be stored on the storage medium (Gelb et al., Figure 4 "Application Programs" 30 and Column 15 Line 51-67);

and a scaling module (Gelb et al., Figure 4 "Data Facility Product" 32) configured to communicate with the application (Gelb et al., Figure 4 "Application Programs" 30 and Column 15 Line 51-67) and select a storage instruction in response to storage criteria applied to storage characteristics of the dataset ("storage classes", Gelb et al., Column 12 Line 43-61 and "compare the information", Gelb et al., Column 18 Line 47 through Column 19 Line 15).

Referring to claim 11, the system of Gelb et al. in view of Basham et al. and further in view of Bergsten as discussed above with regard to claim 7 discloses the invention as claimed. The system of Gelb et al. in view of Basham et al. and further in view of Bergsten teaches the system of claim 7, wherein the storage controller is

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configured to receive the storage instruction and execute the storage instruction (Bergsten, Figure 3, Advanced Storage Controller" 100 and Paragraph 0032 and 0033).

Referring to claim 12, the system of Gelb et al. in view of Basham et al. and further in view of Bergsten as discussed above with regard to claim 7 discloses the invention as claimed. The system of Gelb et al. in view of Basham et al. and further in view of Bergsten teaches the system of claim 7, wherein, wherein the scaling module operates within the host (Gelb et al., Figure 4 "host processor" 10 and "Data Facility Product" 32 and Column 15 Line 51-67).

4. Claim 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gelb et al., in view of Basham et al. and further in view of Bergsten and further in view of Riedel et al. (Erik Riedel, Garth Gibson and Christos Faloutsos, "Active Storage for Large-Scale Data Mining and Multimedia", *Proceedings of the 24<sup>th</sup> VLDB Conference, New York, USA, 1998*).

Referring to claims 13 and 14, the system of Gelb et al. in view of Basham et al. and further in view of Bergsten as discussed above with regard to claim 7 does not explicitly disclose that the scaling module operates within the storage controller or within the storage device. However, Riedel et al. teaches a system and method called "Active Storage" wherein application code is executed within the storage device controller/storage device (Riedel et al., Page 1, Paragraph 2 "*General purpose microcontrollers with 100-200 MHz processing speeds are already being incorporated into high-end commodity disk drives*", Page 3 Figure 1 "The Trend in Drive Electronics",

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and Page 3, Column 1, Paragraph 1 through Page 3 Column 2 Paragraph 1 , “*With Active Disks, excess computation power in storage devices is available directly for application-specific function in addition to supporting these existing storage specific optimizations*” ).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of exploiting the processing power of embedded microprocessors inside disk controller/disk to execute application code as taught by Riedel et al. to the system of Gelb et al. in view of Basham et al. and further in view of Bergsten as discussed above with regard to claim 7 so the, in the resultant system, the scaling module would operate either within the storage controller or the storage device. One would have been motivated to do so in order to “exploit the processors embedded in individual storage device for some of the data-intensive applications common in data mining and multimedia databases” (Riedel et al., Page 1, Column 2, Line 2-6).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Myint whose telephone number is (571) 272-5629. The examiner can normally be reached on 8:30AM-5:30PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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AU-2162

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